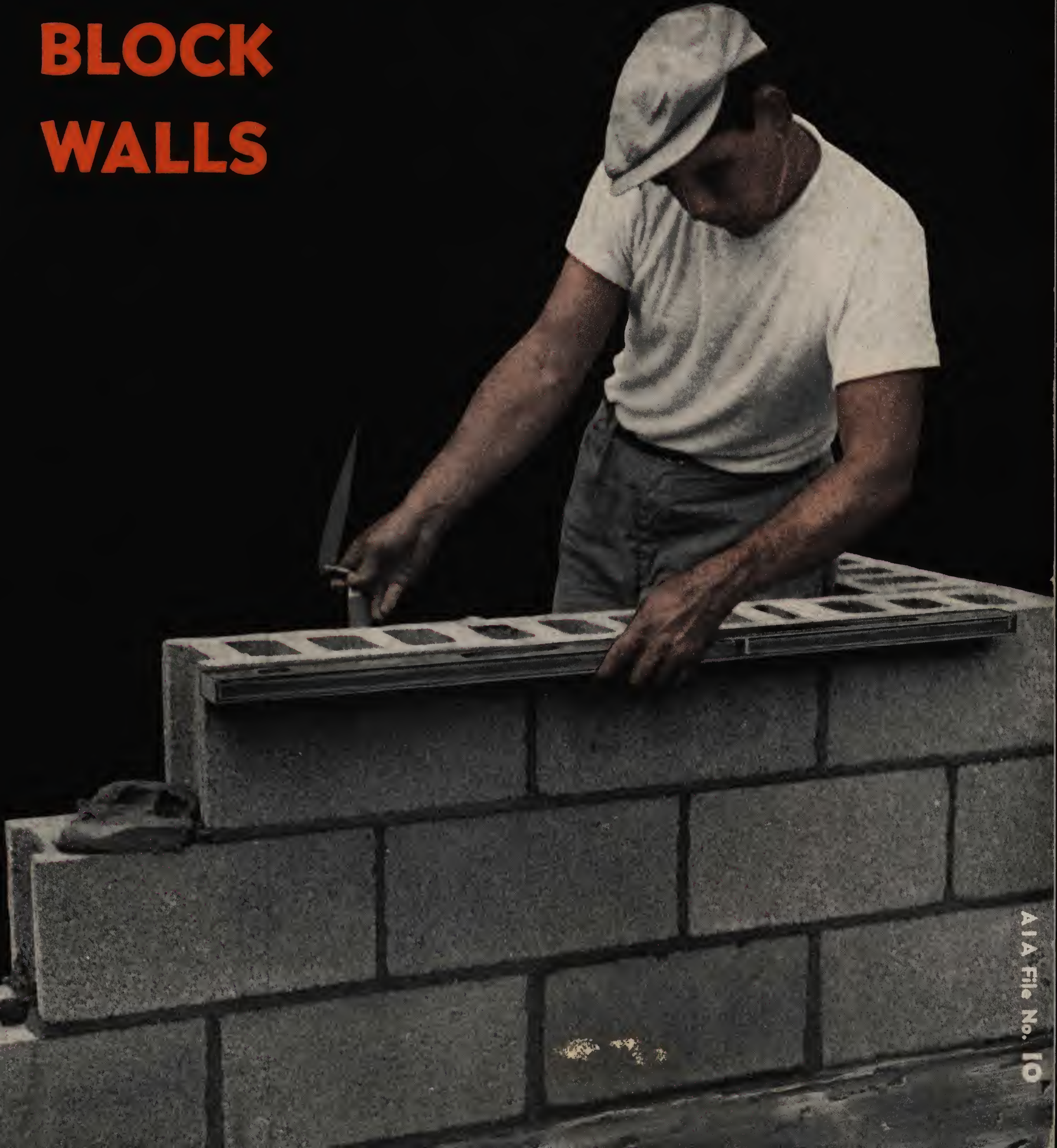
Type of workmanship recommended for CONCRETE BLOCK WALLS



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FOREWORD

IN AN EARLIER PAPER, "Type of Workmanship Recommended to Secure Dry Brick Walls", we described and illustrated the essentials of good bricklaying. That paper did not discuss in detail how to lay concrete block. The purpose of this paper is to describe and illustrate the type of workmanship necessary to secure the best possible concrete block masonry.

This paper makes no attempt to discuss specifications or design. The quality of the block, provision against expansion and contraction, reinforcing, flashing and spandrel waterproofing, painting or other surface waterproofing treatments—these and all other construction details are the responsibility of the architect.

This paper covers only the proper way to lay concrete block.

John H. Mallon, *Vice-President*
Louisville Cement Co., Louisville, Ky.

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TYPE OF WORKMANSHIP RECOMMENDED

TO SECURE the best possible concrete block masonry, all joints must be full of mortar and a complete bond must be secured between the block and the mortar wherever they come into contact with each other.

The block should be laid in such a way that no cracks are formed between the block and the mortar at the time the block is placed.

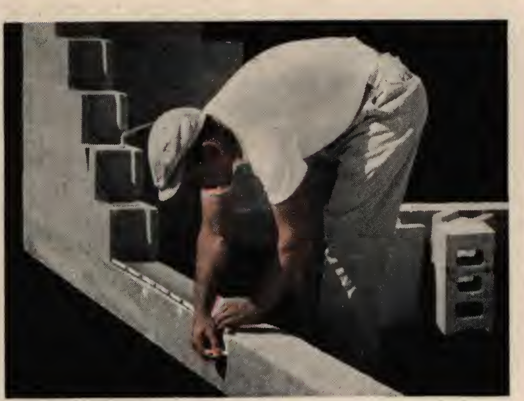
The block should be adjusted to its final position in the wall while the mortar is still soft and plastic enough to insure a good bond.

The position of the block should never be shifted after the mortar has stiffened, or else the bond will be broken and cracks formed.

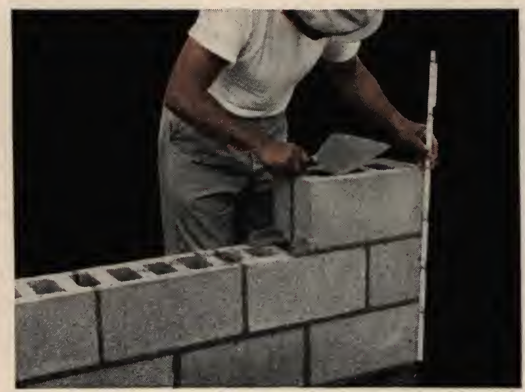
All joints should be filled with mortar at the time the block is laid. Any patching or pointing necessary to fill the joints should be completed while the mortar is still soft and plastic.

LAYING THE BLOCK

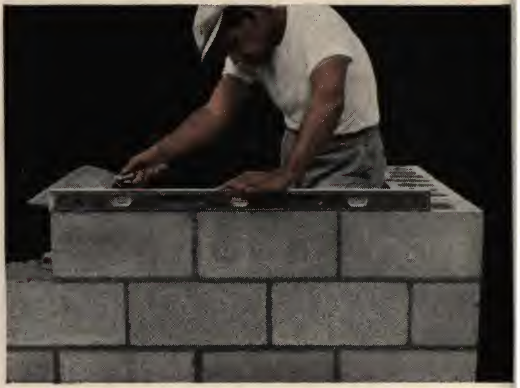
EACH BLOCK should be laid in the wall to the desired height with joints of uniform thickness. It should be leveled, plumbed, and straightened, before the mortar has stiffened.



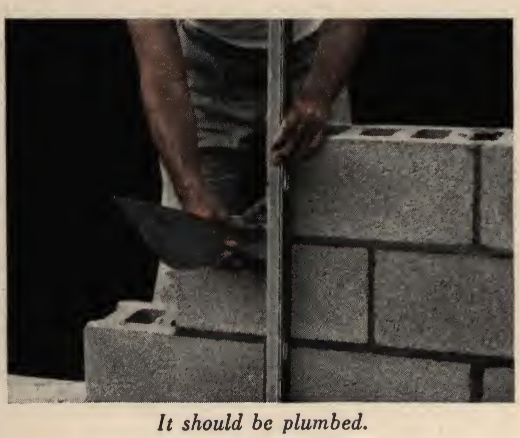
Before the work commences, the bond should be laid out accurately to insure uniform head joints. Then it will not be necessary to shift units in order to fit the closure block in.



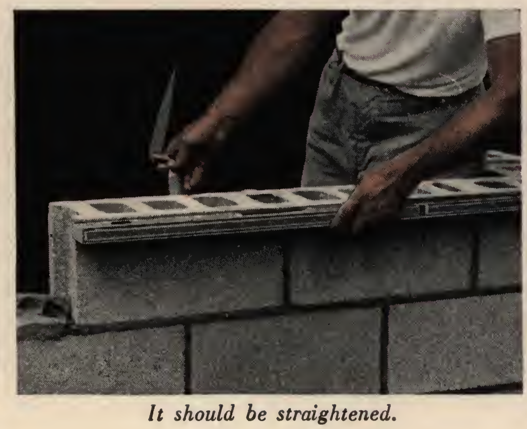
Each block should be laid to the desired height.



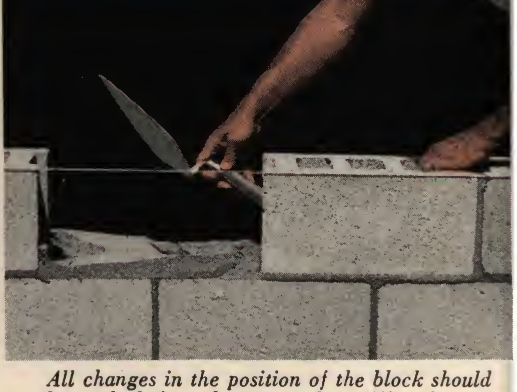
It should be leveled.



It should be plumbed.

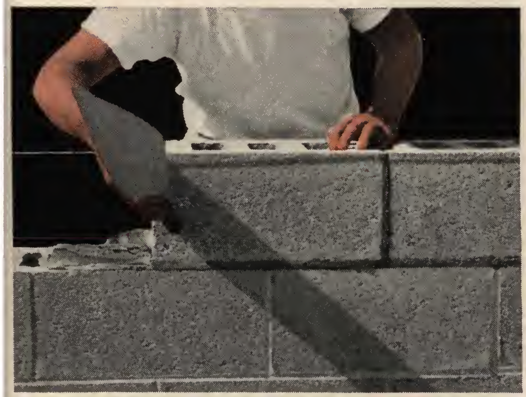


It should be straightened.

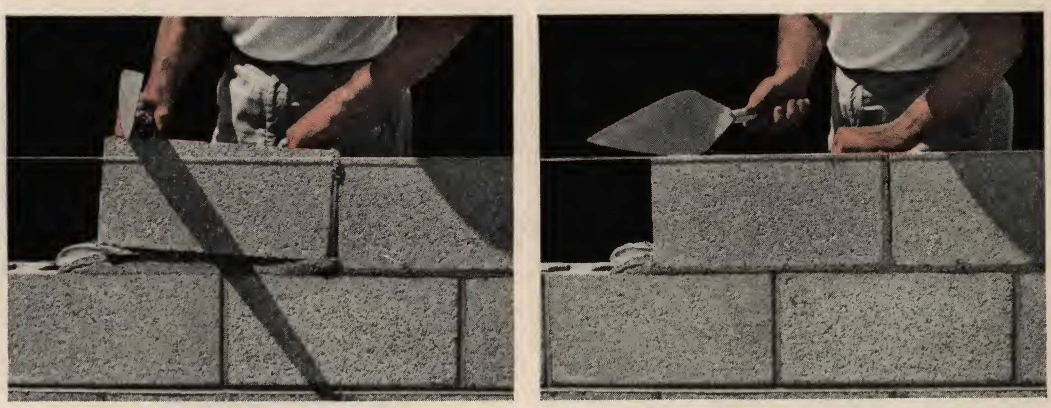


All changes in the position of the block should be made before the mortar has stiffened.

THE BLOCK should be laid in such a way that cracks are not formed at the time the block is placed in the wall.

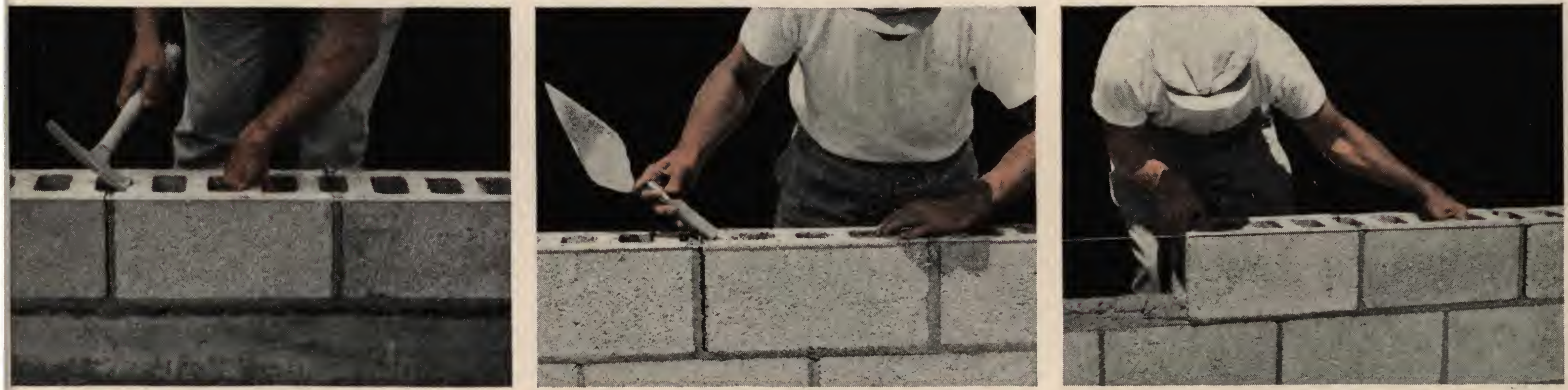


If the block is placed too far out of line on the wall, a crack may be formed when the block is tapped back into line.

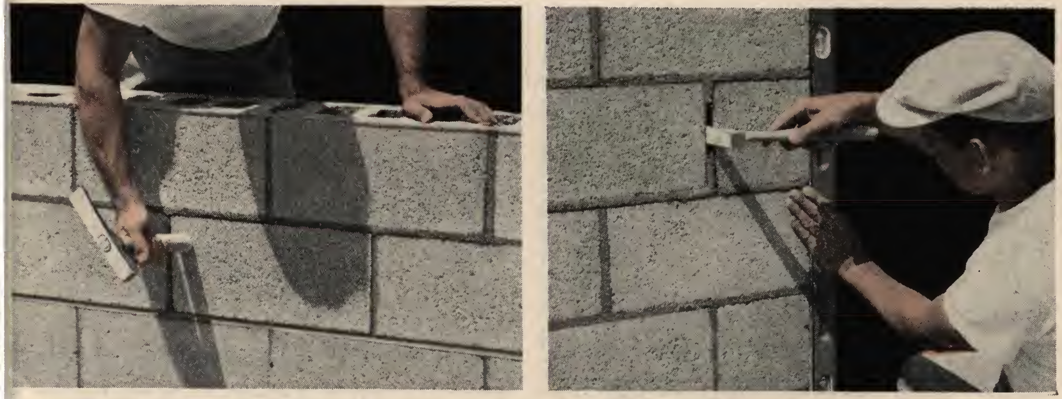


If the block is tilted too much when lowered into position, a crack may be formed when the high end of the block is tapped down to the line.

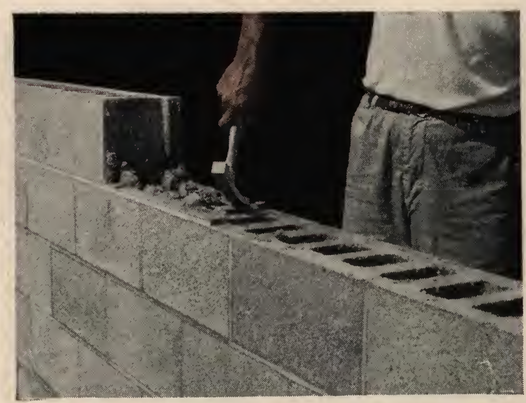
THE BLOCK should be adjusted to its final position in the wall while the mortar is still soft and plastic enough to insure a good bond. If the position of the block is shifted after the mortar has stiffened, the bond is broken and cracks are formed.



The position of the block should never be shifted after the mortar has stiffened. Shifting the block after the mortar has stiffened will break the bond and cause cracks between the block and the mortar.



Realignment of a block should not be attempted after a higher or following course has been laid.

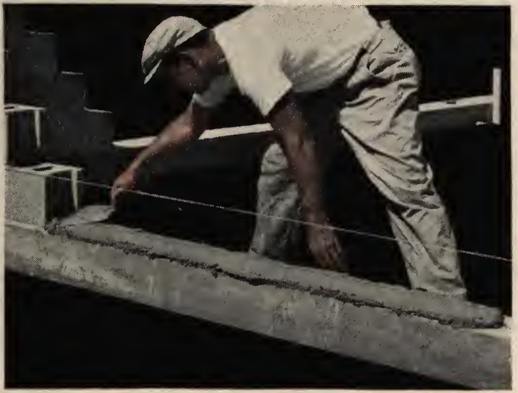


Any block which is disturbed after the mortar has stiffened should be removed and relaid with fresh mortar.

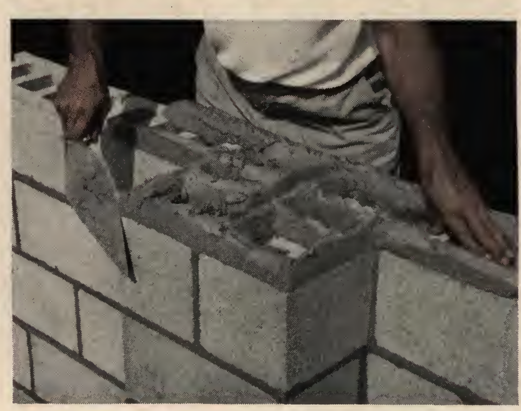
FULL BED JOINTS

FULL MORTAR BEDDING should be used for the first course on the foundation, for pilasters, and wherever maximum strength is required.

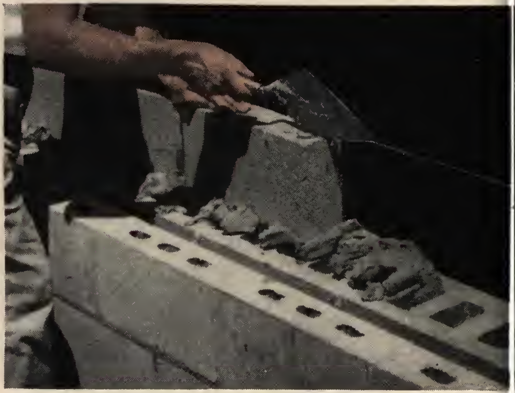
Also, mortar should be spread on the cross webs where those cross webs must serve as the bearing surface for the face shell of the block above.



Full mortar bedding should be used for the first course on the foundation.

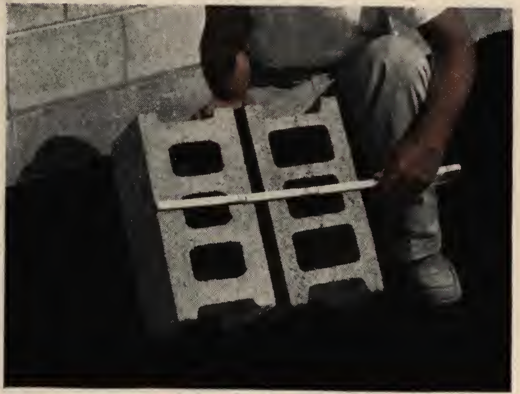


Full mortar bedding should be used for pilasters, and wherever maximum strength is required.

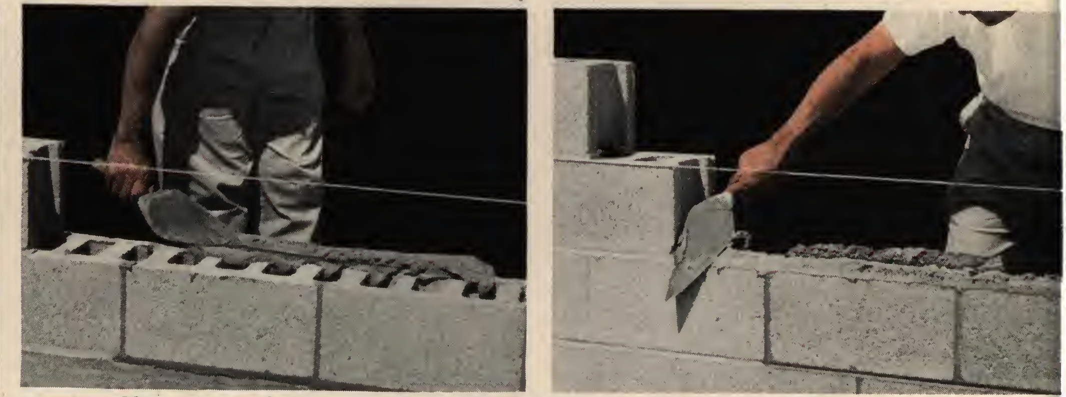


Mortar should be spread on the cross webs where those cross webs must serve as the bearing surface for the face shell of the block above.

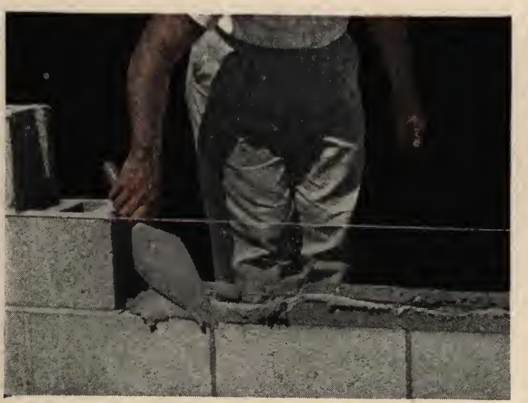
FACE SHELL BEDDING should be used except where full mortar bedding is required. Enough mortar should be spread to fully cover the face shells. Excess mortar should ooze out of the joints on both sides of the face shells when the block is laid.



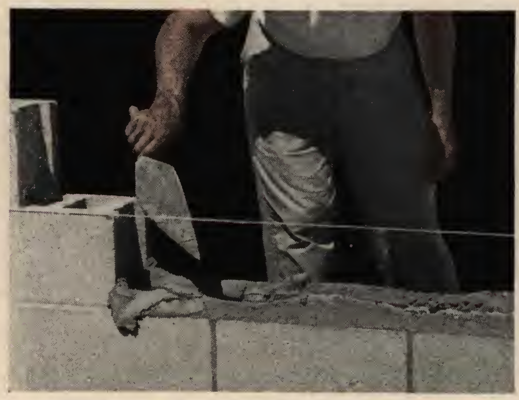
Face shells are wider on the top of the block. Block should be laid with the wide face shells up, to provide maximum surface on which to spread the mortar.



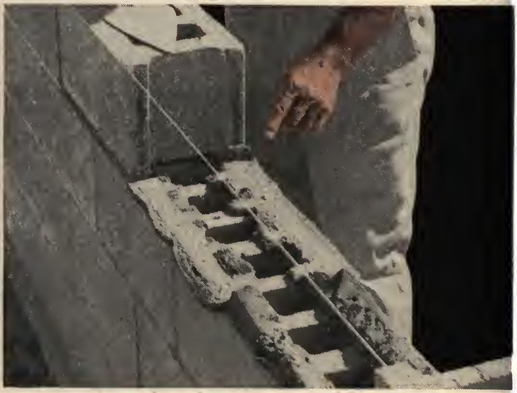
Mortar for the bed joints can be applied either by spreading (left) or by swiping (right).



If the corner is not completely filled when the bed joint is spread,



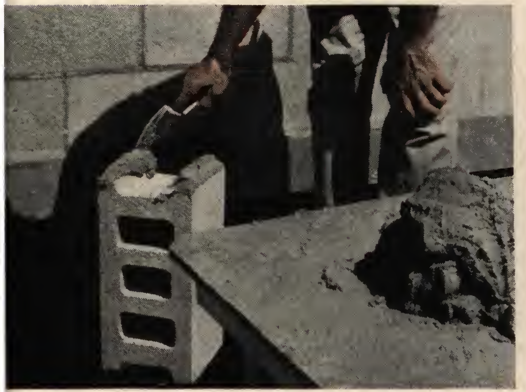
additional mortar should be thrown into the corner, before the next block is placed on the bed joint.



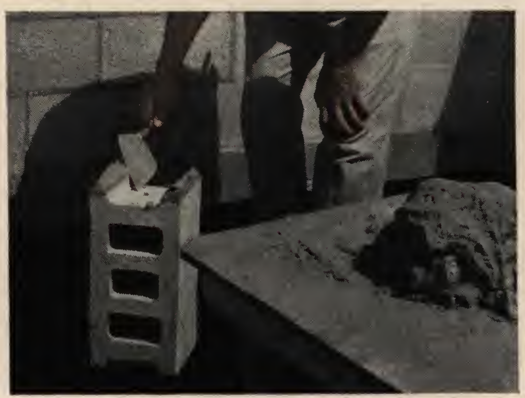
Sufficient mortar should be used to make sure that excess mortar will ooze out on both sides of the face shells.

FULL HEAD JOINTS

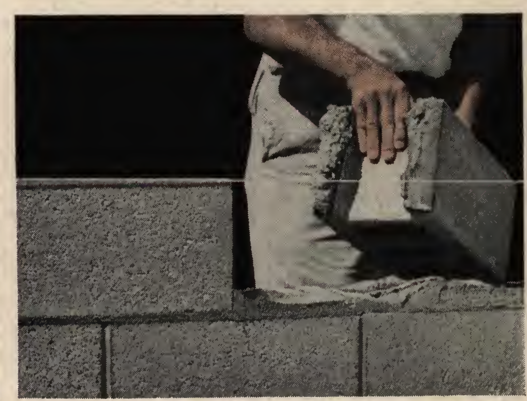
ALL HEAD JOINTS should be full of mortar on both the inside and the outside edges of the block. Enough mortar should be used to cause excess mortar to ooze out of the head joints on both sides of the face shells.



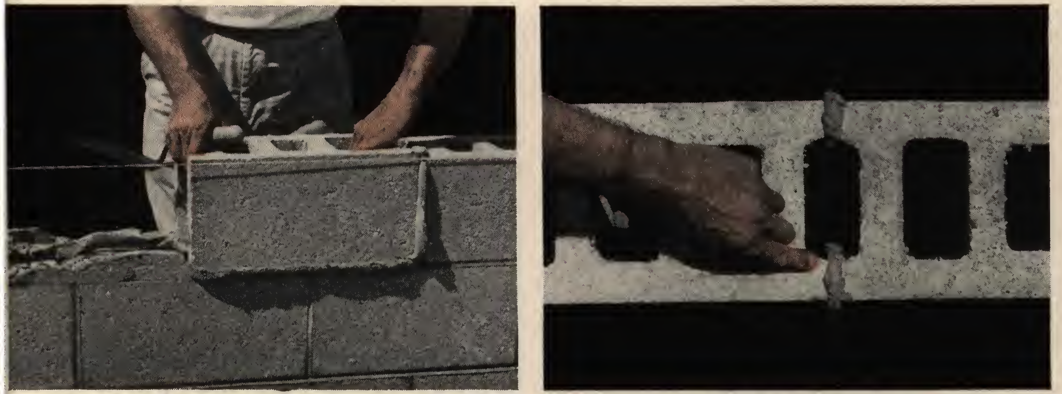
Full head joints should be swiped on both edges of the block to be placed.



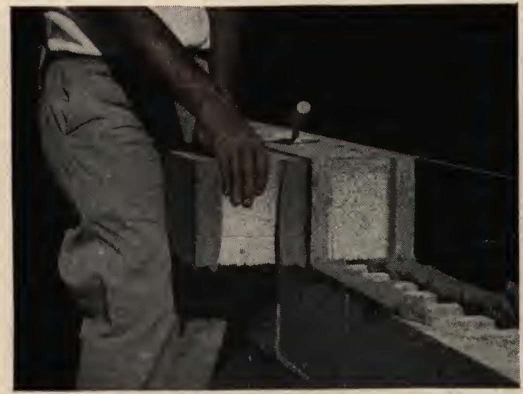
The mortar should be pressed down on the ears of the block so it will not fall off,



when the bricklayer lifts the block and places it in the wall.



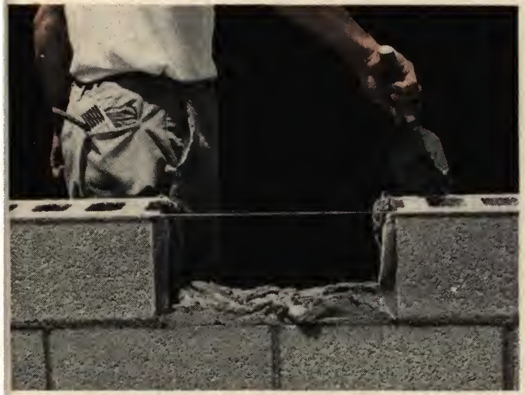
Enough mortar should be used to cause excess mortar to ooze out of the head joints on both sides of the face shells.



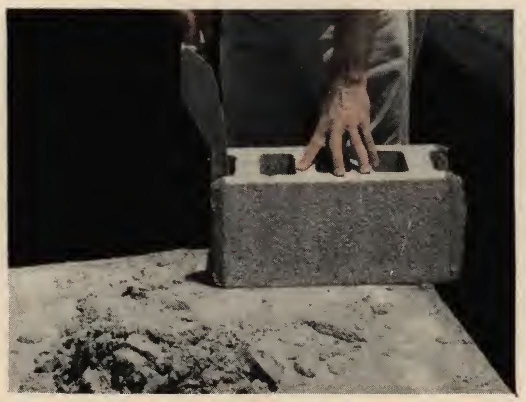
This will produce full head joints.

BEFORE PLACING the closure block, mortar should be swiped on all four edges of the blocks already in place. In addition, mortar should be swiped on all four edges of the closure block.

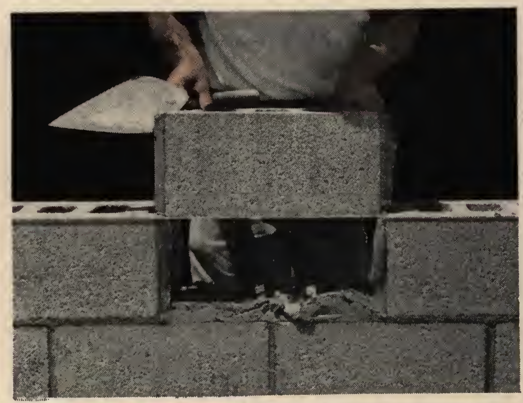
The closure block should then be lowered into place without disturbing the blocks already in the wall.



Mortar should be swiped on all four edges of the blocks already in place.

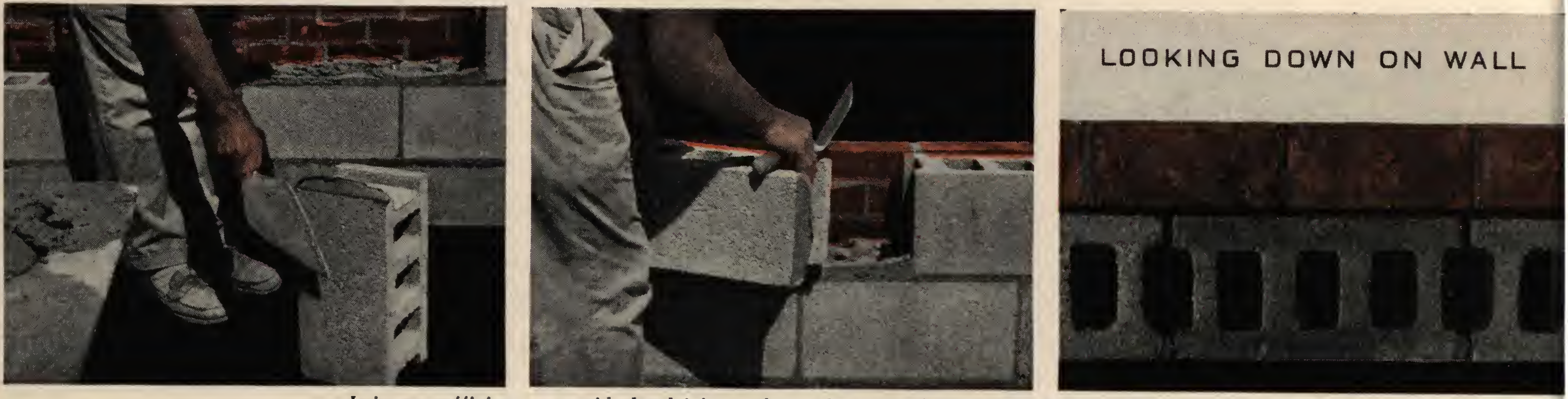


In addition, mortar should be swiped on all four edges of the closure block.



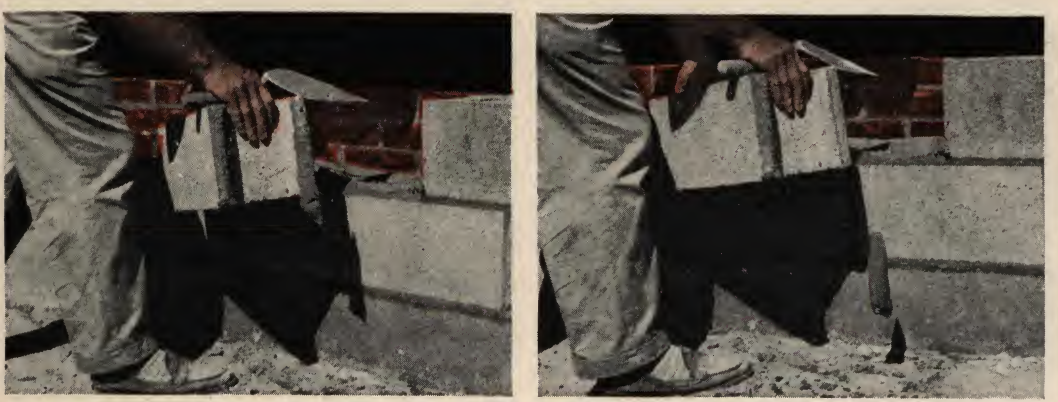
Then the closure block should be lowered without disturbing the blocks already in place,

WHEN BACK-UP BLOCK are laid, mortar should not be omitted from the head joints in the interior of the wall next to the face brick.

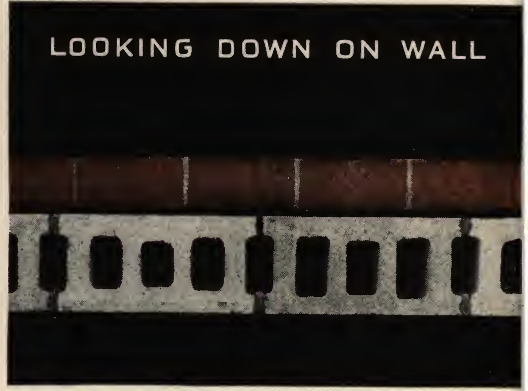


It is not sufficient to provide head joints only on the exposed face of the back-up blocks.

THE HEAD JOINT should not be left empty if the mortar falls off while the block is being placed.

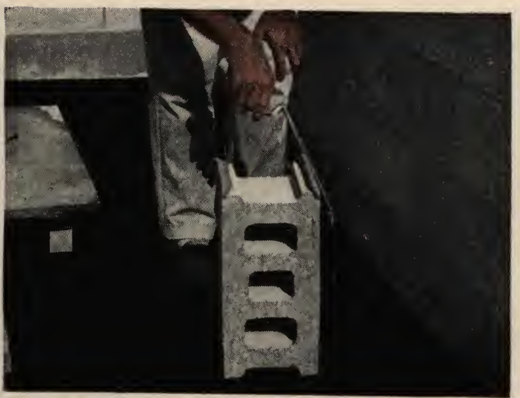


If the mortar falls off a head joint while the block is being placed,

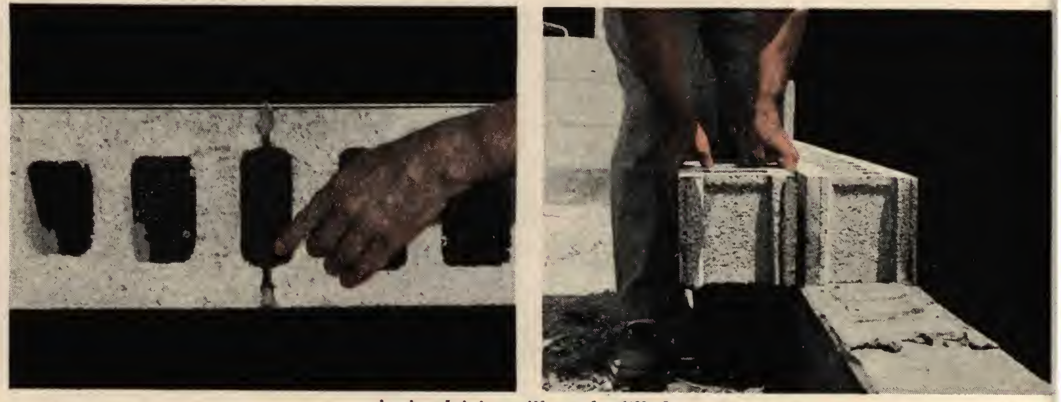


the head joint should not be left empty.

BLOCK should not be laid with too little mortar in the head joints.

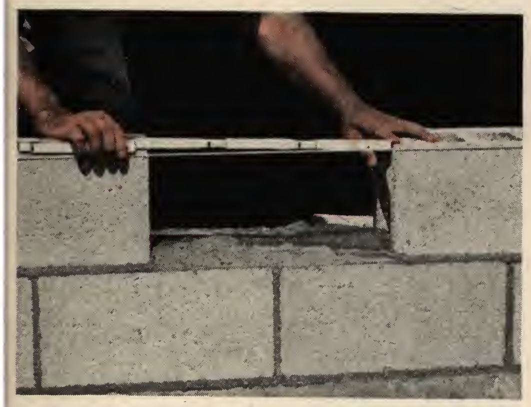


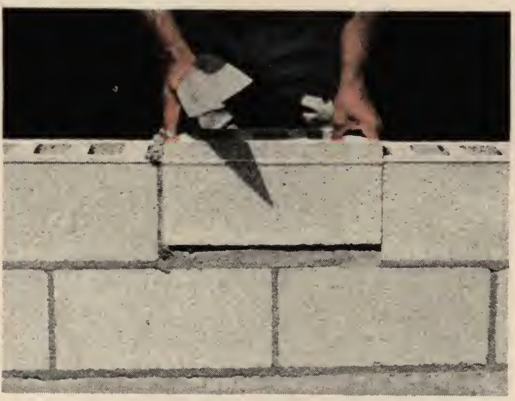
If insufficient mortar is swiped on the edges of the block,

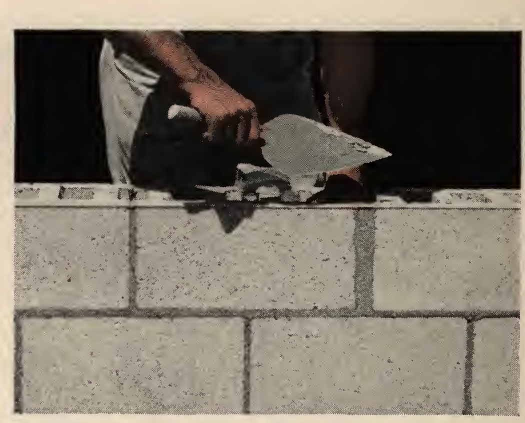


the head joint will not be filled.

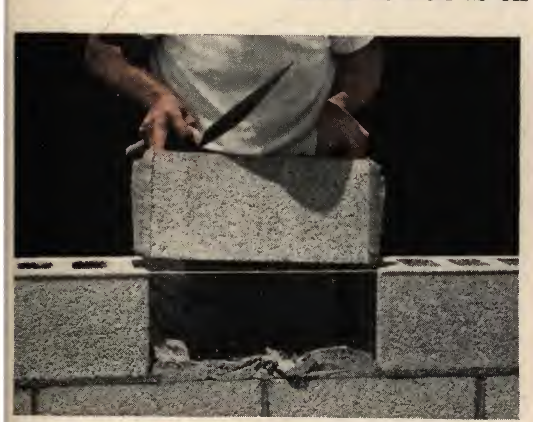
BEFORE MAKING a closure, the length of the opening should be checked. A closure should not be made with a full block if it makes too tight a joint. Nor should a closure be made which gives too wide a joint.

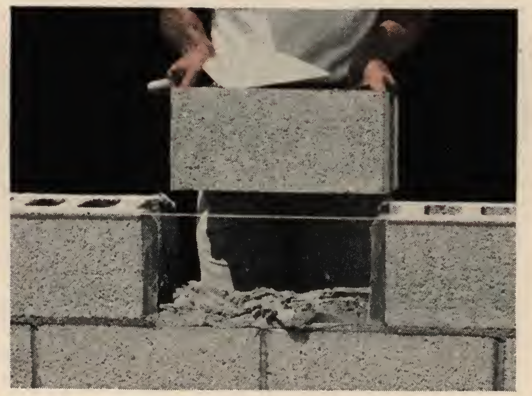

Before making a closure, the length of the opening should be checked.

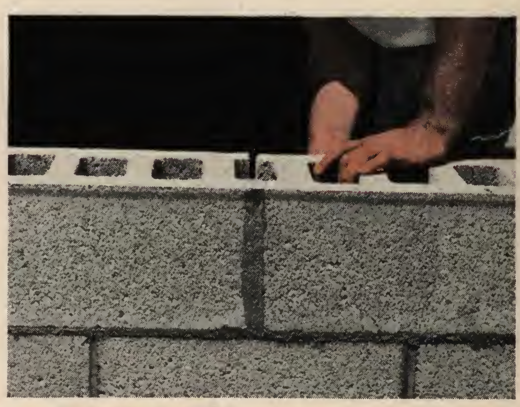

A closure should not be made with a full block if this will give too tight a joint.


A closure should not be made which results in too wide a joint.

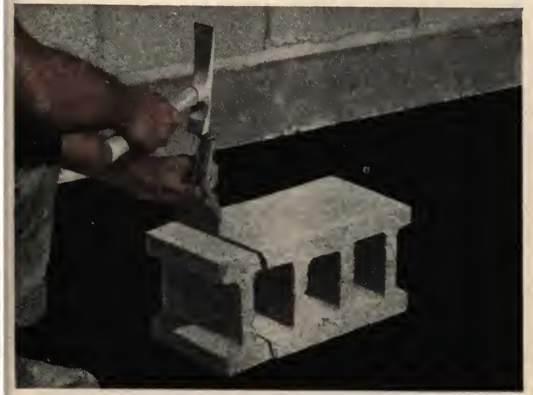
CLOSURES should not be made without swiping mortar on all edges of the closure block as well as on all edges of the blocks already in the wall.

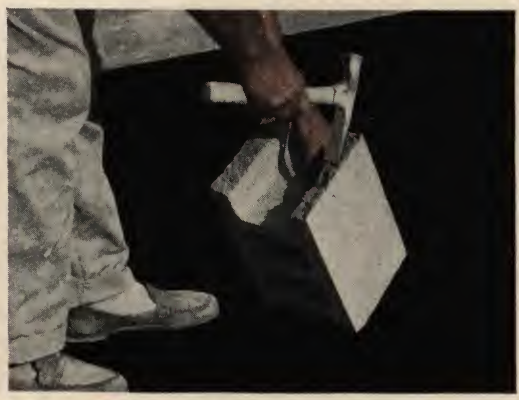

Mortar should not be omitted from the edges of the blocks already in place.

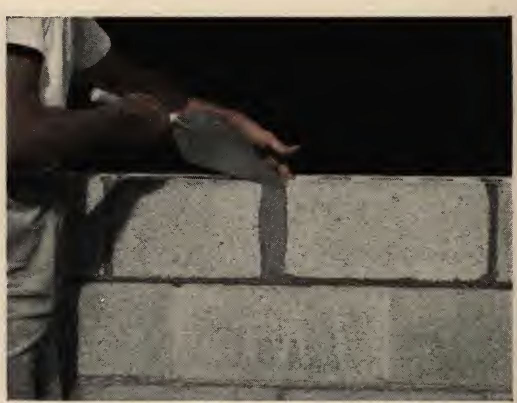

Mortar should not be omitted from the edges of the closure block.


No joints should be empty, after the closure block has been placed.

IF A BLOCK must be broken to make the closure, it should be accurately measured; then sawed, or cut and dressed, to avoid an oversized joint on one side of the wall.

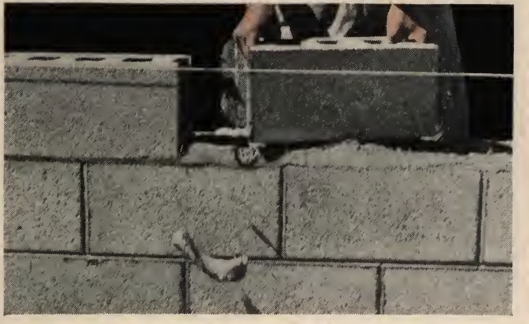

If a block must be broken to make the closure, it should be accurately measured and cut.


It should be carefully dressed.

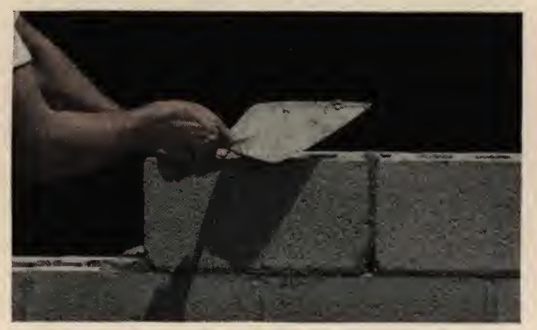

An oversized joint on one face of the wall should be avoided.

PATCHING AND POINTING

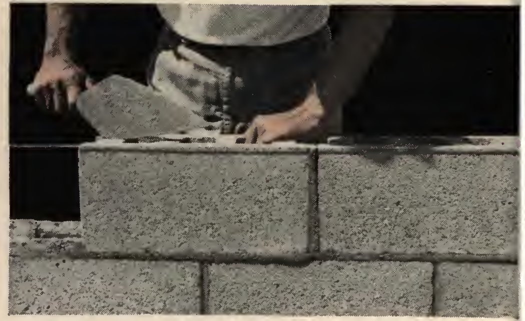
EVEN WHEN CARE is taken to secure good workmanship, some patching and pointing is necessary. Occasionally, when a block is first placed in the wall, the head joint is not full for one reason or another. Or sometimes a crack is formed between the block and the mortar while the block is being placed and aligned.



Sometimes a head joint may fall off while the block is being placed in the wall.



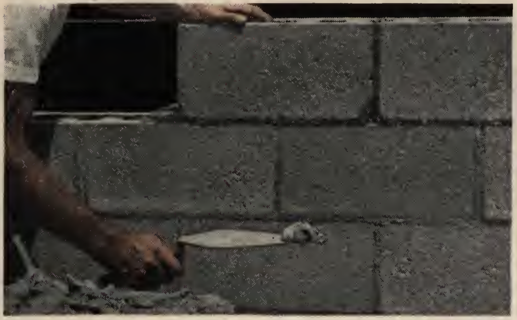
Sometimes there is not enough mortar to fill the space left by a broken corner.



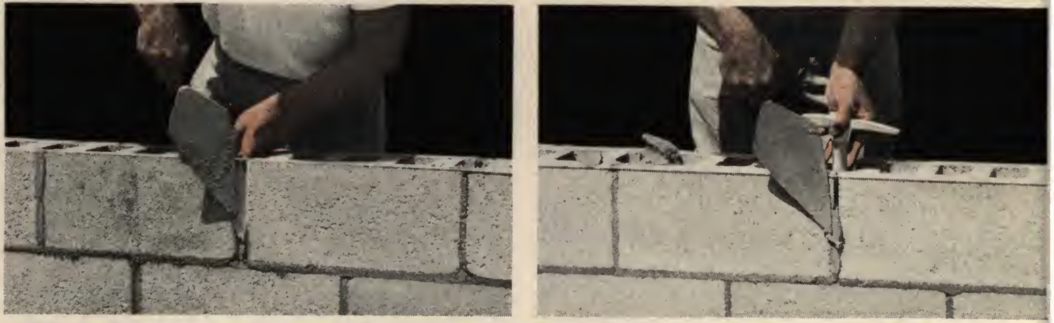
Sometimes a crack is formed while the block is being placed and aligned.

WHENEVER the joints are not full, they should be repaired by patching and pointing with additional mortar, while the mortar in the wall is still fresh and plastic.

When additional mortar is forced into the joint, a backstop should be provided—such as the hand or a hammer handle.



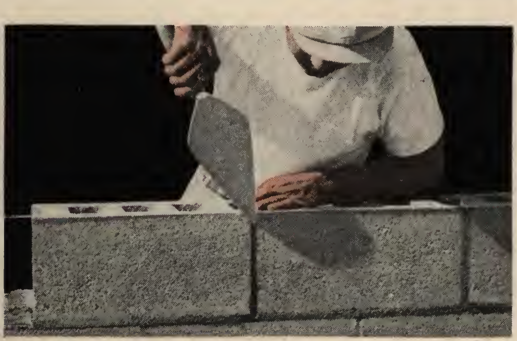
For patching and pointing, additional mortar should be used. All repairs should be made while the mortar in the joint is still fresh and plastic.



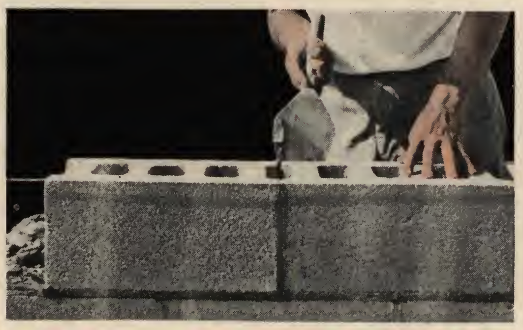
When additional mortar is forced into the joint, a backstop should be provided—such as the hand or a hammer handle.

OPEN JOINTS and cracks should be properly repaired with sufficient mortar to completely fill the joints. Openings and cracks are merely concealed and closed at the surface only, when such joints are struck without using any additional mortar. They are only partially filled when too little additional mortar is used.

Fresh mortar should always be used. The bricklayer should never patch or point with dead mortar from the scaffold or the wall.



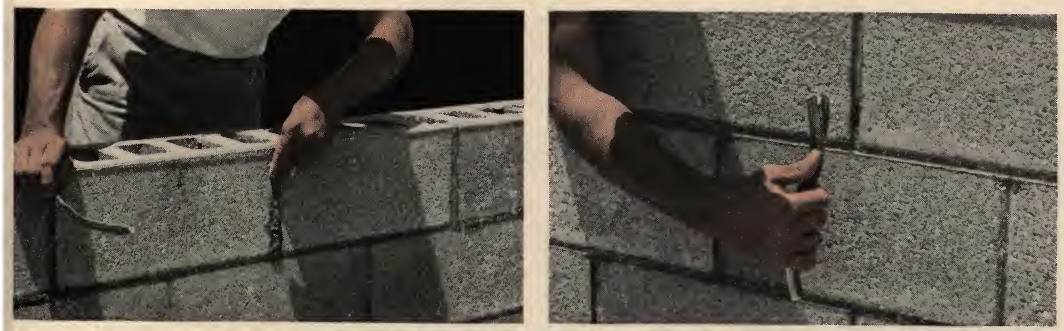
If the joint is repaired by striking without using any additional mortar, the open joint will be merely concealed.



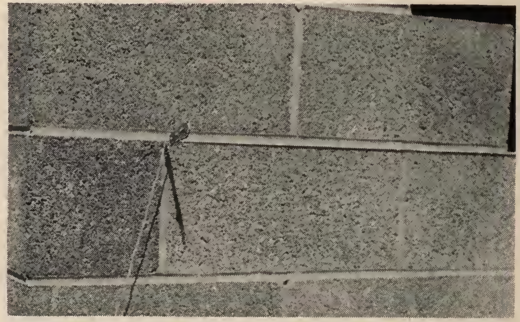
If the joint is repaired with too little additional mortar, the open joint will be only partially filled.

The bricklayer should never patch or point with dead mortar from the scaffold or the wall.

WHEN THE JOINTS are tooled, any depressions and nail holes should be filled with fresh mortar, before the final tooling.

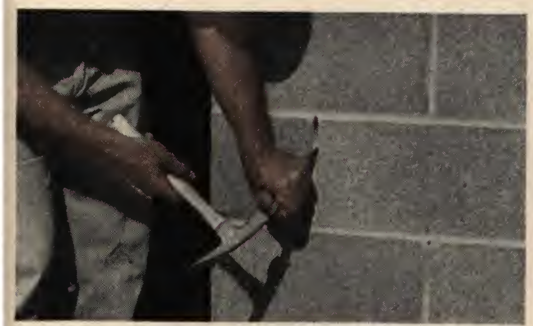


Any depressions should be filled with fresh mortar before the final tooling.

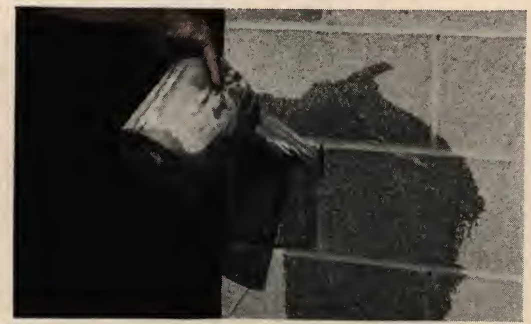


Holes made by nails or line pins should be plugged with fresh mortar.

IF FOR ANY REASON patching or pointing must be done after the mortar in the wall has hardened, the mortar in the joint should be chiseled out to a depth of approximately ½ inch. The joint should be wetted thoroughly, and then repointed with fresh mortar.



If patching or pointing must be done after the mortar has hardened, the joint should be chiseled out to a depth of about ½ inch.

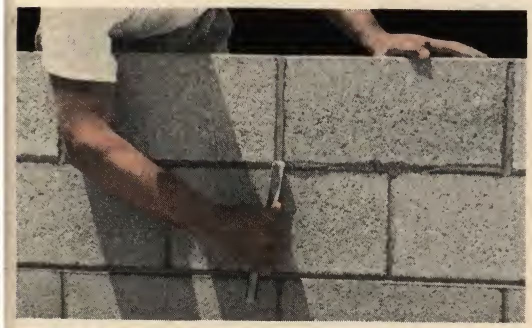


After the joint has been chiseled out, it should be thoroughly wetted.

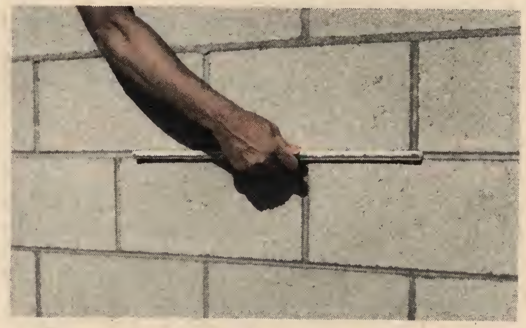
While the joint is wet it should be repointed with fresh mortar.

TOOLING

UNLESS THE ARCHITECTURE requires some other finish, all joints on the exterior face of the wall should be tooled concave or V-shaped. This should be done with a tool slightly larger than the joint, after the mortar has stiffened, but before it has hardened. Sufficient force should be used to press the mortar tight against the blocks on both sides of the joint. Such tooling helps seal any cracks which may have been left between the mortar and the blocks when the blocks were laid.



The joints on the exterior face of the wall should be tooled to give a concave or a V-shaped finish.



The mortar should be pressed tight against the blocks on both sides of the joint.

Such tooling will help make the joint weather-tight.

MORTAR

FOR GOOD BLOCKWORK, a strong complete bond must be secured between the block and the mortar wherever they come into contact with each other. Such a bond can be secured only if the mortar stays soft and plastic while the block is being placed in the wall and adjusted to its final position.

The mortar should be properly mixed. It should have plasticity to stick to the long head joint, while the block is being lifted into place. It should have body to support the weight of the block and hold it up to the line.

The mortar should be properly mixed — soft but not sloppy, firm but not stiff.

The mortar should have plasticity to stick to the long head joint, while the block is being lifted into place.

The mortar should have body to support the weight of the block and hold it up to the line.

THE MORTAR should be kept tempered on the board. The mortar should be soft and plastic whenever the bricklayer picks up a trowel full.

The mortar should have high water retaining capacity to keep the block from sucking the water out of the mortar too fast when the mortar is spread out on the wall. It should stay soft and plastic until the block has been leveled and plumbed, and has reached its final position in the wall.

The mortar should be kept tempered on the board at all times.

Whenever the bricklayer picks up a trowel full of mortar, it should be soft and plastic.

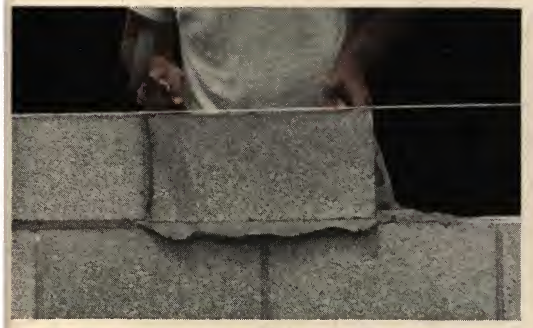
The mortar should have high water retaining capacity to keep the block from sucking the water out of the mortar too fast.

THE BRICKLAYER should adjust and shift the block to its final position in the wall and should repair all open joints while the mortar is still soft and plastic.

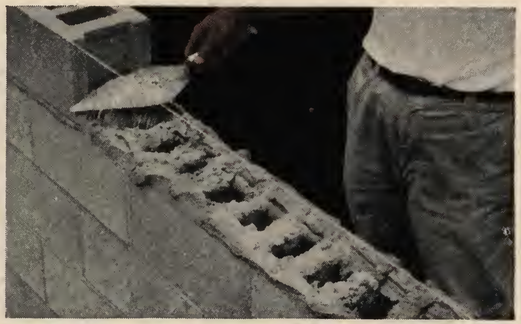
All shifting and adjusting of the block to its final position should be finished while the mortar in the joints is still soft and plastic.

All open joints should be repaired while the mortar in the joints is still soft and plastic.

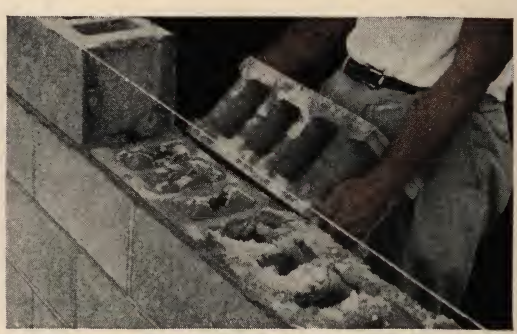
THE MORTAR should not be too wet, or else the block cannot be held up to the line. The mortar on the bed joint should not be dusted with cement to stiffen it. Cement dust prevents a bond.



If the mortar is too soft and does not have sufficient body, the block cannot be held up to the line.



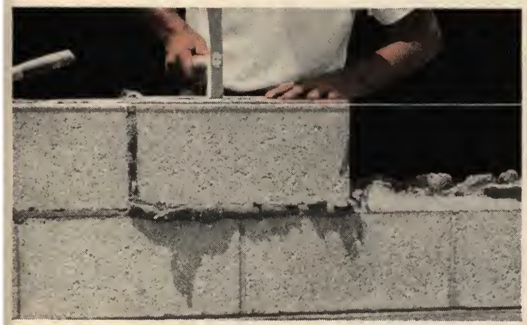
If the bed joint is dusted with cement to stiffen it,



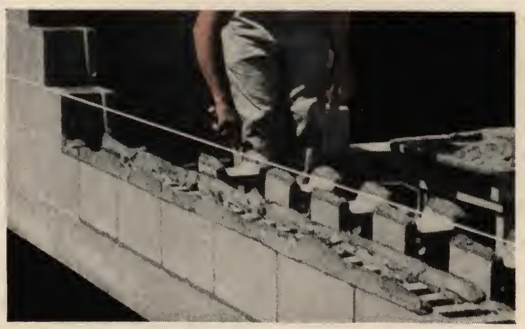
the cement dust will prevent a bond between the mortar and the block placed on top of it.

THE MORTAR should not be too stiff, or else the block cannot be easily and accurately laid to the line, and a good complete bond cannot be secured between the block and the mortar.

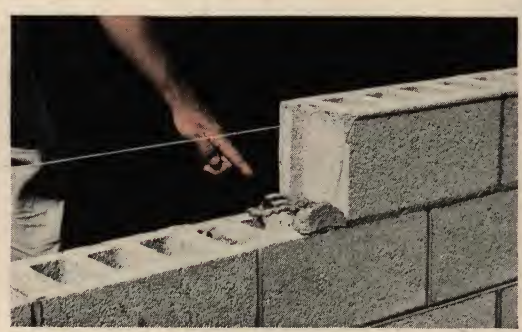
Mortar, even if properly mixed, becomes stiff if it is spread out on the wall too far. It is sucked dry before the last block is laid.



If the mortar is too stiff, the block cannot be easily and accurately laid, and a good bond will not be secured.

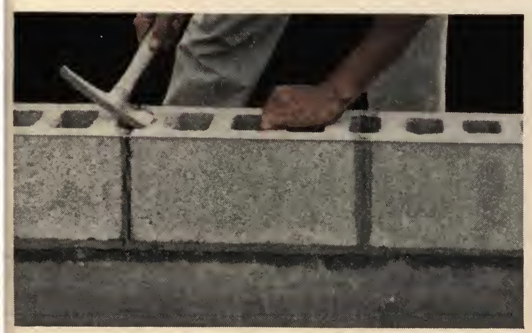


If the mortar is spread out too far on the wall, it will be sucked dry and will stiffen before the last block is laid.

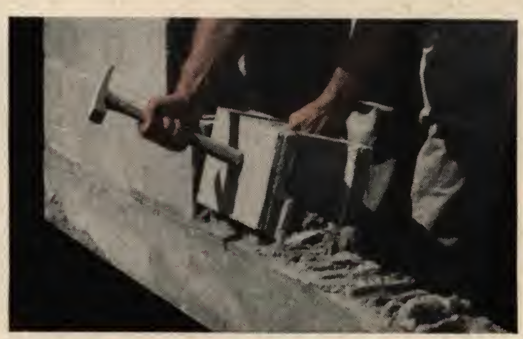


Projecting tabs of dried out mortar should be removed from the wall.

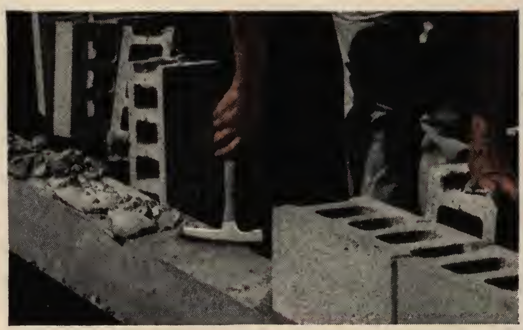
THE POSITION of a block should never be shifted after the mortar has stiffened. If it becomes necessary to move a block after the mortar has stiffened, the block should be removed, the dead mortar scraped off the wall, and the block then re-laid with fresh mortar.



The position of a block should never be shifted after the mortar has stiffened.



If it becomes necessary to move a block after the mortar has stiffened, the block should be removed from the wall and re-laid with fresh mortar.



All the dead mortar should be scraped off the wall and off the block before it is re-laid.

BRIXMENT FOR MORTAR

For thirty-five years Brixment has been recognized as the leading masonry cement. It makes excellent mortar for use with concrete block.

It has the body necessary to support the weight of the block and hold it up to the line.

It has the plasticity necessary to stick to the long head joint while the block is being placed in the wall.

It has the water retaining capacity necessary to keep it soft and plastic and to extend the time during which the bricklayer can shift the block without breaking the bond.

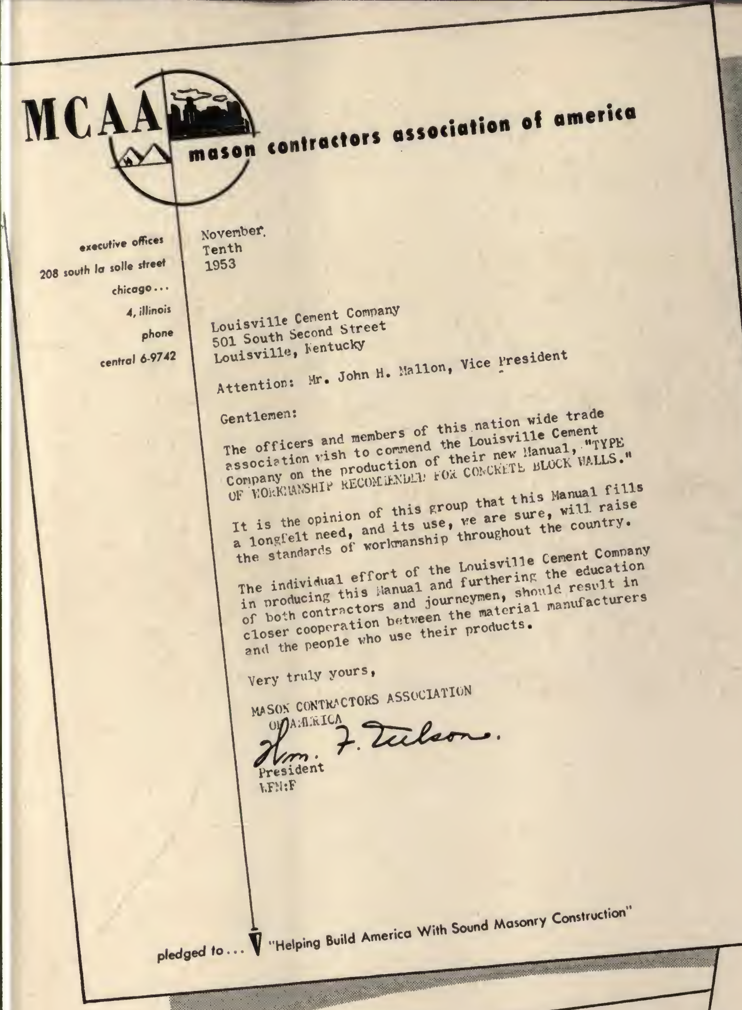
LOUISVILLE CEMENT COMPANY
Incorporated
Louisville, Kentucky

TYPE OF WORKMANSHIP RECOMMENDED TO SECURE Dry Brick Walls
SPECIFICATIONS RECOMMENDED TO SECURE DRY BRICK WALLS

OTHER TECHNICAL PAPERS AVAILABLE

Over the past 20 years a great deal of careful research by outstanding authorities has been carried on to determine how water can be prevented from passing through brick walls.

The pamphlets shown at the left describe and illustrate the type of workmanship and the specifications which should be used to secure *dry brick walls.* Copies will be sent free, without obligation, to any architect, contractor, bricklayer or dealer who requests them. Write the Louisville Cement Company, Louisville, Kentucky.



MCAA
mason contractors association of america

executive offices
208 south la salle street
chicago . . .
4, illinois
phone
central 6-9742

November
Tenth
1953

Louisville Cement Company
501 South Second Street
Louisville, Kentucky

Attention: Mr. John H. Mallon, Vice President

Gentlemen:

The officers and members of this nation wide trade association wish to commend the Louisville Cement Company on the production of their new Manual, "TYPE OF WORKMANSHIP RECOMMENDED FOR CONCRETE BLOCK WALLS."

It is the opinion of this group that this Manual fills a longfelt need, and its use, we are sure, will raise the standards of workmanship throughout the country.

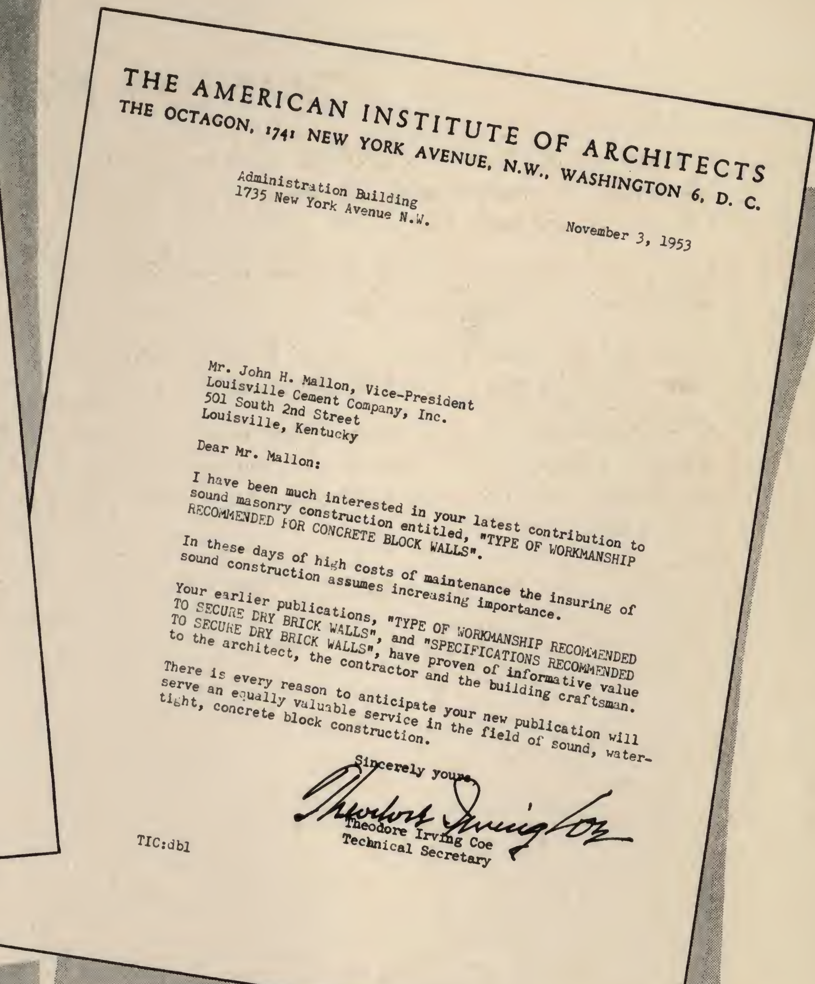
The individual effort of the Louisville Cement Company in producing this Manual and furthering the education of both contractors and journeymen, should result in closer cooperation between the material manufacturers and the people who use their products.

Very truly yours,

MASON CONTRACTORS ASSOCIATION
OF AMERICA

Wm. F. Tulson.
President
WFN:F

pledged to . . . "Helping Build America With Sound Masonry Construction"



THE AMERICAN INSTITUTE OF ARCHITECTS
THE OCTAGON, 1741 NEW YORK AVENUE, N.W., WASHINGTON 6, D. C.

Administration Building
1735 New York Avenue N.W.

November 3, 1953

Mr. John H. Mallon, Vice-President
Louisville Cement Company, Inc.
501 South 2nd Street
Louisville, Kentucky

Dear Mr. Mallon:

I have been much interested in your latest contribution to sound masonry construction entitled, "TYPE OF WORKMANSHIP RECOMMENDED FOR CONCRETE BLOCK WALLS".

In these days of high costs of maintenance the insuring of sound construction assumes increasing importance.

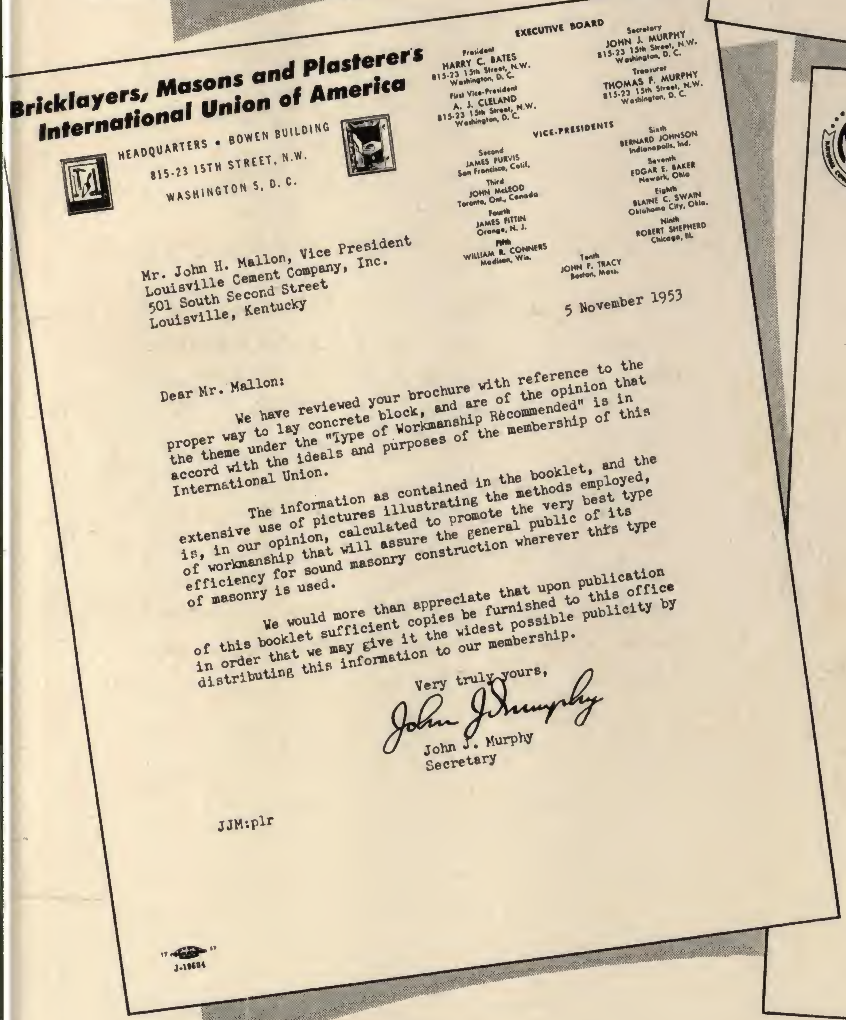
Your earlier publications, "TYPE OF WORKMANSHIP RECOMMENDED TO SECURE DRY BRICK WALLS", and "SPECIFICATIONS RECOMMENDED TO SECURE DRY BRICK WALLS", have proven of informative value to the architect, the contractor and the building craftsman.

There is every reason to anticipate your new publication will serve an equally valuable service in the field of sound, water-tight, concrete block construction.

Sincerely yours,

Theodore Irving Coe
Theodore Irving Coe
Technical Secretary

TIC:dbl



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International Union of America
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Mr. John H. Mallon, Vice President
Louisville Cement Company, Inc.
501 South Second Street
Louisville, Kentucky

5 November 1953

Dear Mr. Mallon:

We have reviewed your brochure with reference to the proper way to lay concrete block, and are of the opinion that the theme under the "Type of Workmanship Recommended" is in accord with the ideals and purposes of the membership of this International Union.

The information as contained in the booklet, and the extensive use of pictures illustrating the methods employed, is, in our opinion, calculated to promote the very best type of workmanship that will assure the general public of its efficiency for sound masonry construction wherever this type of masonry is used.

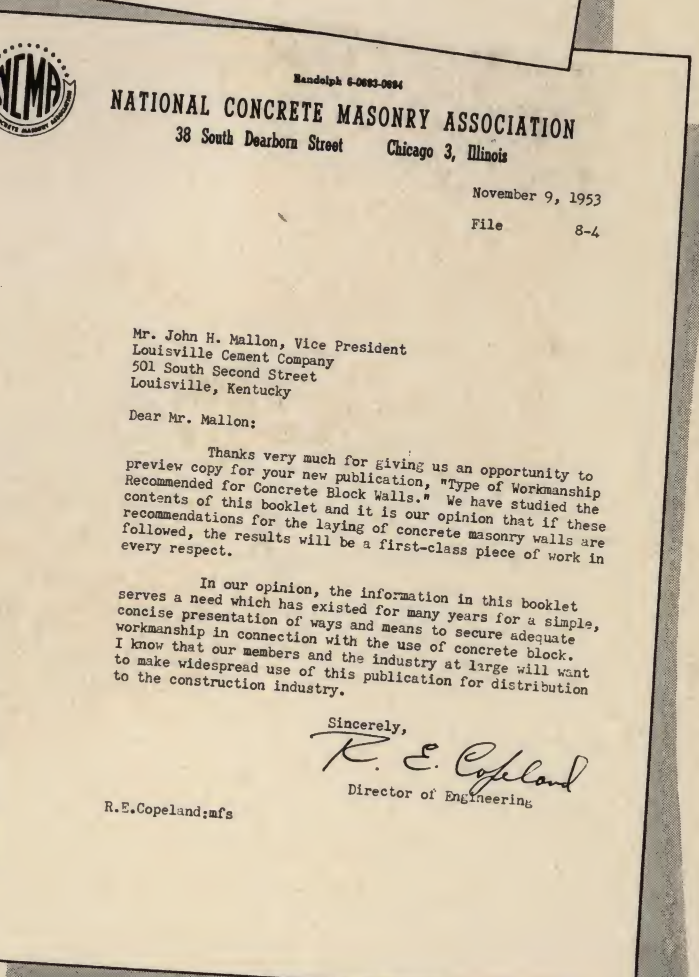
We would more than appreciate that upon publication of this booklet sufficient copies be furnished to this office in order that we may give it the widest possible publicity by distributing this information to our membership.

Very truly yours,

John J. Murphy
John J. Murphy
Secretary

JJM:plr

J-19684



NCMA
Randolph 6-0683-0684
NATIONAL CONCRETE MASONRY ASSOCIATION
38 South Dearborn Street Chicago 3, Illinois

November 9, 1953
File 8-4

Mr. John H. Mallon, Vice President
Louisville Cement Company
501 South Second Street
Louisville, Kentucky

Dear Mr. Mallon:

Thanks very much for giving us an opportunity to preview copy for your new publication, "Type of Workmanship Recommended for Concrete Block Walls." We have studied the contents of this booklet and it is our opinion that if these recommendations for the laying of concrete masonry walls are followed, the results will be a first-class piece of work in every respect.

In our opinion, the information in this booklet serves a need which has existed for many years for a simple, concise presentation of ways and means to secure adequate workmanship in connection with the use of concrete block. I know that our members and the industry at large will want to make widespread use of this publication for distribution to the construction industry.

Sincerely,

R. E. Copeland
Director of Engineering

R.E.Copeland:mfs

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